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GEORGE W. YORK,
Editor.

CHICAGO, ILL., DECEMBER 26, 1901.

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WEEKLY



APIARY OF R. WHEELER, OF ALAMEDA CO., CALIF.
(See page 820.)

THE AMERICAN BEE JOURNAL

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- To promote and protect the interests of its members.
- To prevent the adulteration of honey.
- To prosecute dishonest honey-dealers.

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AMERICAN BEE JOURNAL

THE OLDEST BEE-PAPER IN AMERICA

41st YEAR.

CHICAGO, ILL., DECEMBER 26, 1901.

No. 52.

* Editorial. *

The Annual Index will be found in this issue of the American Bee Journal. As many readers preserve every number, the index will be found a very valuable thing. In fact, if there were nothing else in this copy but the index, it would still be worth a good deal, as it shows the wide range of apiarian subjects treated in a single year.

Breeding from the Best has been the motto for so long a time, that when F. B. Simpson advocated in the Bee-Keepers' Review that a queen of very exceptional qualities being in the nature of a freak could not be relied upon to reproduce herself, therefore it was better to breed from a queen whose progeny were only a little above the average as to results, but showing greater constancy in her royal progeny—when Mr. Simpson advocated this doctrine, it seemed a little like the explosion of a bomb-shell. No one has proved that Mr. Simpson's position is wrong, and yet the fact remains that good results have been obtained—or at least seem to have been obtained—by following the old rule, to breed from the best.

Mr. Doolittle says in *Gleanings in Bee-Culture* that he has followed that rule for 30 years—breeding always from the queen that gave workers most valuable in bringing in nectar from the fields, rather than from those of the most uniform markings or purity, mentioning especially one remarkable freak from which he reared nearly all of his queens as long as she lived. Not only has his average yield per colony increased, but the uniformity of yield from his colonies has been constantly on the increase.

Comb Honey by the Case.—On another page, Mr. D. W. Working, the secretary of the Colorado Bee-Keepers' Association, has a reply to both the recent article by R. A. Burnett & Co. and our editorial on the same subject.

We fail to see how Mr. Working can expect to convince any one that it is a fair way to sell honey at wholesale by the case—simply lump it off—instead of by weight. We wonder if he'd like to buy coal in that way—by the box full—may be box even full and shaken down, and may be not.

It is certainly more nearly fair to retail sections of honey by the piece than to wholesale it by the case (no weighing being done in either), for the consumer, if he thinks he

is not getting enough for his money, can have his grocer weigh it right before him. But the wholesaler has not that advantage when buying by the case at a distance.

Yes, sir; it was "quite fair" to use the \$400 illustration we did. The dealer in question was not guilty of any "smart dealing." But the people from whom he bought that particular car-load of honey simply euchred themselves out of \$400 by not selling their honey by weight instead of by the case. Surely, any one, if he desires to do so, can see the point in our illustration. The only fair way, as we see it, to all concerned, is to sell honey by weight, and not lump it off by the case. The wholesale buyer will sell by weight to the retail grocers, then why shouldn't he (the wholesale buyer) buy by weight?

What reasonable objection can there be to selling honey by weight? We know of none.

LATER.—One of our good Colorado subscribers seems to be quite upset over this matter, and, in fact, becomes somewhat personal and sarcastic in a private letter. He seems to think that we were the ones who made that \$400. Not at all. We never handled any honey by the case, except about a half car-load, and that was sold at the same price we paid for it—was sold before it was shipped, as we didn't care for it ourselves. We don't care to buy or sell honey by the case, as we don't think it is the correct method, with all due deference to our Colorado friends, and others who sell by the case.

We could give some more good illustrations on this subject, but think it unnecessary just now.

The Cost of Drones is considerable. Dr. Bachner estimates that 1000 drones consume a little more than 4 ounces daily. A Straw in *Gleanings in Bee-Culture* says:

"That means that the drones reared in 28 square inches of comb will, in five weeks, consume about 9 pounds of honey."

But the Straw man estimates only a single generation of drones, whereas there may be two or more generations, although all the drones are not allowed to live five weeks. A considerable amount of honey should also be figured in what is used to feed the drone-brood.

Injury to Queens in the Mail is a subject of some discussion in *Gleanings in Bee-Culture*. Two of the somewhat numerous Miller family are not in entire accord as to the reason why it is that after a queen has been sent through the mail she will sometimes "go bad," although having been all right before being mailed. Arthur C. Miller

says the trouble is that the queen has suffered for want of proper nourishment. He says:

Remember that a queen in the full exercise of her functions is developing two and a half times her own weight of eggs every 24 hours. It is not the sudden taking of the queen from a place in which to deposit her eggs that injures (for she can and will continue to extrude them as they develop), but it is the lack of sufficient proper food to restore the drain on her system. If such food is not available in sufficient quantity, she starves, and on the duration of such starvation depends the extent of injury to her vitality. Knowing these things, and knowing that a queen free in her hive can ask and obtain food from thousands of bees, is it irrational to believe and assert that she must suffer when compelled to depend on *two* bees, only a few of which may be able to supply her needs? These statements may be readily verified by any one who cares to take the necessary pains.

Dr. C. C. Miller thinks that when a queen heavy with eggs is put in the mails, her great weight is such that she can not hold on to her place, and is injured by severe concussions. He suggests the advisability of caging a queen 24 hours before mailing, so that she will not be so heavy.

Whichever one is right, or even if both are right, might not the previous caging be a good thing? If the trouble comes from starvation, because the queen demands such a large quantity of food, certainly the caging ought to help, for after 24 hours cessation of laying she would not demand so much food.

Educating Tastes in Animals.—At the Chicago convention there was a decided difference of opinion as to the liking of stock for sweet clover, some saying that cattle would not eat it, and others saying they would eat it greedily. Both were no doubt correct, the fact being that there is more than is generally supposed in the matter of having the taste educated. With no thought of reference to sweet clover, A. I. Root, in *Gleanings in Bee-Culture*, tells about poultry having educated tastes, so that they greedily ate raw beans.

It is also said that Texas cattle that have never eaten corn will refuse to eat it at first. It is well known that cows in a state of nature are quite dainty in their tastes, yet the family bossy may be trained to eat almost anything, including dishwater. If sweet clover hay be fed dry, it will in many cases be accepted more readily than the green fodder, and perhaps in all cases a little persistence may succeed in having stock eat sweet clover either green or dry.

The Laws of Breeding, it is pretty safe to say, have never before had the attention they are having from bee-keepers and

queen-breeders to-day. At least, there never was as much said upon the subject as at the present time in the bee-papers. Doubtless much more would have been written and known on the subject if the mating of bees could be controlled as in the case of other animals. It is at least within the range of possibilities that control of fertilization may yet become an accomplished fact, and if it ever does come it will be well to be prepared for it in advance. Even if we never reach any greater control than at present, a thorough knowledge of all that can be learned about breeding may be turned to account. Especially let the younger members of the fraternity inform themselves as fully as possible. Doubtless more or less that is confusing, and sometimes contradictory, may be found in the bee-papers, but careful sifting may get that which will be useful in leading toward improvement of our present stock of bees.

Weekly Budget.

APIARY OF R. WHEELER.—On the first page of this number is the picture of the apiary of R. Wheeler, of Alameda Co., Calif. It is located in the corner of his chicken yard, showing all the hives but one. In the further right corner is a nucleus hive, containing four 3-frame nuclei, under the same roof, where he boards his spare queens. To the left will be seen a shade-roof made of shakes 3 feet long, nailed to strips of board 2x1, three in number. It hangs on a pivot one-third distance from the edge, as shown in the picture. By throwing forward it gives room to work at the hives, changes the shade, etc. In front of the hives is coal-ashes. Between the two pieces of old boiler-tubing is planted mignonette and primrose. The hydrant and hose are in the near right corner. All is enclosed by a wire fence 3 feet high. It is a very neat apiary.

BRITISH ESTIMATE OF AMERICANS.—It is very pleasant to know that a very kindly feeling exists between this and the mother country, especially among bee-keepers. F. W. L. Sladen, a prominent British bee-keeper who is spending some months in this country, writes to the British Bee Journal:

I feel convinced that we have a great deal to learn from our American cousins. They are a progressive people, and are fast coming to the front in almost everything. The evidences of progress throughout the country, and especially in the cities, have simply amazed me. Many of the American bee-keepers' methods and appliances are unsuitable for adoption in England, on account of climatic and other differences, but there are others that ought certainly to be valuable to us, and it is to be hoped that our people will give them a fair trial, so that we may not lag behind the times.

MR. FRANK RAUCHFUSS, the energetic and wide-awake manager of the Colorado Honey-Producers' Association, was in Chicago a few days last week. He had been visiting various cities in the interest of his Association, which will doubtless result in mutual benefit. We had several good visits with Mr. Rauchfuss. So did Mr. Burnett, of R. A. Burnett & Co. Of course, the subject of selling comb honey by case *vs.* weight was discussed quite thoroughly, and we think Mr. Rauchfuss returned feeling that there is more than one side to it.

The Buffalo Convention.

Report of the Proceedings of the Thirty-Second Annual Convention of the National Bee-Keepers' Association, held at Buffalo, New York, Sept. 10, 11 and 12, 1901.

(Continued from page 805.)

THIRD DAY—EVENING SESSION.

The meeting was held at Epworth Hotel, and was called to order at 8 p.m., by Mr. Watrous, president of the Pomological Society, who announced that one of the papers set down for the afternoon session, and which had not been reached at that session, would be read then. After the reading of the paper, which was of no practical interest to bee-keepers, President Watrous said: "We have with us to-night the National Bee Keepers' Association, and their officers, in conjunction with ours, have provided a series of discussions here which we shall next have, and without further preliminaries we will now listen to Prof. James Fletcher, of Ottawa, Ont., Canada."

Prof. Fletcher then delivered the following address on the subject of

Bees as Fertilizers of Flowers.

At the last annual meeting of the Ontario Bee-Keepers' Association, I had the pleasure of delivering an address on "The Value of Bees in Fruit Orchards," in which, among other subjects, I discussed the burning question of whether bees did or could injure the fruit-grower by attacking sound fruit on the trees. The position I took at that time was that unless fruit was first broken or injured, honey-bees could not gain access to the juice of the fruits. It appears to me now, however, that the ability of bees to puncture ripe fruit need not take up so much discussion at a bee-keepers' meeting as has on some occasions been given to it.

If it is so very doubtful whether they can or cannot cause injury, it seems *prima facie* evident that even if this is possible—which I do not believe—the injury occurs so seldom that it need not be considered. If it were a frequently occurring or important injury, some of those who have watched bees, either as friends or enemies, would have been able to settle the matter long before this.

Another subject taken up by me at the time referred to was, "Bees as Fertilizers of Flowers," and at the request of President Root, of the National Bee-Keepers' Association, I have prepared a short paper for this evening's meeting on that subject, in which I shall direct your attention to the striking interrelation of plants and insects, and in which I trust that I may be able to lay before you facts which may be new to some of your members, must be of interest to all, and cannot but call forth admiration for the marvelous provisions which are to be seen everywhere in Nature for the bringing about of good and useful results and prevent-

ing waste. It will be found that not only are flowers absolutely necessary to bees, as the source of their food—nectar and pollen—but that bees and other insects are no less necessary to most flowers, so that their perpetuation may be secured.

This fact should be recognized by the fruit-grower, above all others, for were it not for insects, and particularly for the honey-bee, his crops of fruit would be far less than they are every year, and even in some cases he would get no fruit at all.

Failure in the fruit crop is more often due, I think, to dull or damp weather at the time of blossoming, which prevents insects from working actively in the flowers, than to any other cause. Flowers of plants are a special development of leaf-growth, produced for a special purpose, namely, for securing the fertilization, development and maturing of the seeds, which are the chief means by which a species of plant is preserved from extinction. A normal flower consists of two sets of organs—a protective envelopment made up of the corolla, which as a rule has highly colored and showy petals; and the calyx, which is mainly a protection during the time the corolla and the more important organs contained within it are developing. The other set of organs, known as the essential organs, comprise the stamens and pistils; the former of these represent the male sex, and the latter the female. The anthers—the important part of the stamens—are practically small cases containing pollen, without the agency of which the ovules or undeveloped seeds which are formed in the lower part of the pistil cannot come to maturity, or—from the fruit-grower's point of view—unless the flowers on his trees are fertilized in this way, no fruit will form, and his labor will be in vain. It is necessary that pollen should be applied to the stigma or sensitive portion of the pistil before the seeds can be developed, and it has been found that it is most advantageous to a species that the seeds of a given flower shall be fertilized by the pollen from some other flower of the same species.

A study of the devices provided by Nature to insure this cross-fertilization forms one of the most charming branches of the whole study of botany. It is a branch of the subject which may be said to have had its origin in the remarkable investigations of the great naturalist, Charles Darwin, and has since been developed in Europe by Lubbock, Anton Korner, and Miller. In this country excellent work has been done by Messrs. Halsted, Bailey, Robertson, Waugh, and others who are with us to-night; so that it will be seen that the study itself is quite recent, but,

now that attention has once been drawn to it, it can be recognized as a general principle running through all branches of the vegetable and animal kingdoms. Although, as was pointed out by Darwin, some plants can be and are fertilized by their own pollen, it is always of greater benefit to their descendants for flowers to be fertilized by pollen from other flowers of the same kind growing upon other plants. He summed up his observations with the trite observation, "Nature abhors perpetual self-fertilization," which was first enunciated in his great work published in 1862 on the fertilization of orchids. The publication of this classic work marks the beginning of one of the most important eras in the history of the science of botany. Since then endless observations have confirmed the accuracy of Darwin's law, and it has been found that in the vast majority of plants special appliances exist which will secure a more or less frequent inter-cross, and that in many these appliances completely exclude the possibility of self-fertilization.

The cross-fertilization of some plants is insured by the male and female organs occurring in separate flowers, either on the same or different plants. Familiar instances of male and female flowers on the same plant are the male catkins of such trees as the butternut, hickory, the birches, oaks and hazels. The female flowers are much less conspicuous but easily recognizable near the tip of the twigs. In the willows we find the male and the female catkins on separate trees, each tree bearing either staminate male flowers, or pistillate female ones. In many cases where the two sexes occur in the same flower, self-fertilizing is prevented by the male and female organs coming to maturity at different times, sufficiently far apart for it to be impossible for the pistil to be fertilized by the pollen borne on the same flower. In many cases there are remarkable contrivances which prevent the impregnation of flowers by their own pollen. In the species of primrose—and no better example can be found than the well known house-plant from the Himalayas—*Primula obconica*—it will be found that the flowers on different plants are dimorphic, some flowers having the tip of the pistil at the mouth of the tube and the anthers well down towards the bottom, while in other flowers this order is reversed, and the anthers are produced at the mouth of the tube and the pistil is so short that it does not reach half way up. Darwin proved by growing many plants from the seeds that by far better plants were obtained by the flower bearing long or short pistils being crossed with pollen from the other kind of flower. There are some flowers which are actually sterile to their own pollen, but can be fecundated readily with pollen from flowers growing on another plant of the same species. It has been pointed out by Prof. Waugh, of Vermont, that this is the case with the red American plums, and it is also the case with many varieties of apples and pears. This fact at once indicates the important bearing the presence of insects in an orchard at the time of blossoming has upon the production of an abundant fruit crop. Moreover, it can be shown that, owing to its size, weight and habits, no insect is so well calculated to insure the fertilization of

fruit-blossoms as the honey-bee, which plies rapidly from plant to plant, and by running over the flowers in search of pollen or nectar, brushes off the pollen and carries this vitalizing element on the hairs of its body to the next flower visited. The habit of the bees, which has frequently been noticed, of confining the visits when collecting largely to the same kind of plant, is taken advantage of by the bee-keeper to store up at certain seasons particular kinds of honey, such as apple, raspberry, basswood, clover and buckwheat honeys. This habit is also manifestly advantageous to the plants on account of the pollen which is carried by the bee being of the kind necessary for the fertilization of its flowers, which could not be effected if the pollen were that of some other kind of plant.

A few weeks ago I saw a striking instance confirmatory of this well-known fact. High upon the summit of Mount Che-am in the coast range of British Columbia, are magnificent mountain meadows, undulating plateaux, thickly covered during the month of August with the greatest profusion of brilliant flowers—wide stretches of golden arnicas, crimson, green and white mountain heathers, beds of veratrus, valerian, lupines, large, white umbellifers, crimson cartilleas, yellow adder's tongue, lilies, potentillas and waving grasses and sedges. This gigantic flower-bed, as might be expected, simply teemed with insect life. Butterflies sailed lightly from place to place; flies, beetles and small bees hurried and scurried in every direction, making the most of the short mountain summer, and the whole producing a picture of the greatest delight to the naturalist whose only, ever-present regret was that so few others could enjoy the enchanting scene.

Conspicuous on the purple spikes of the lupines were numerous, busy, grumbling, clumsy bumble-bees, crawling over the gay flowers, rifling them of their nectar, and filling their pollen-baskets with bright red pollen, which was most conspicuous on their black and white bodies, and strikingly different in color from the ordinary pollen collected elsewhere.

There are endless devices in flowers to secure the distribution of pollen at the time it will be of most use, and also for its protection from moisture after it had been emitted from the anthers. This is secured, in most instances, by the shape of the flowers, or the position of the floral leaves; again, the male and female organs of some flowers are very sensitive, the pollen being cast forth with some violence as soon as the stamens are touched by insects.

An instance of this is to be found in the common Canadian swamp-plant, called Lambkill or Swamp Laurel; the anthers are held down in small depressions round the edge of the corolla, and when an insect visits the flower, the stamens spring up, the anthers burst, and the pollen is thrown against the insect's body. The same thing may be observed in the common barberry flower.

In addition to the classes of plants already referred to, which are sterile to their own pollen (and in a few remarkable instances where the pollen is actually poisonous to the pistil of the same flower) there are numberless species which are partially sterile when

fertilized with their own pollen, and to a less degree when fertilized with pollen from close relatives, such as seedlings from the same parent as the plant bearing the flowers; and finally, in a large class where there is no apparent obstacle to self-fertilization, cross-fertilization often occurs from what is known as the prepotency of pollen from another individual over a plant's own pollen.

The agency by which pollen is transported from one flower to another is either animate or inanimate, and certain peculiarities will be found in flowers characteristic of each class. The inanimate agency with most flowers is the wind, and in these flowers the pollen is dusty and exceedingly light, so as to be carried on the lightest breeze; the flowers are inconspicuous and there is no nectar nor perfume. On the other hand, in those flowers which are dependent on an animate agency, which is mainly insects of various kinds, these insects must be attracted to the flowers; and we accordingly find that brilliant colors and far-reaching odors are developed.

These alone, however, would be of small gratification to the visitors; consequently, something more satisfying is provided, namely, nectar and pollen, which form the food of vast hordes of the insect world, and particularly of the honey-bee. Moreover, the remarkable provision is made that these attractions only appear just at the time when the visits of insects can be of a definite benefit to the plant; and further than this, an endless variety in the structure of the leaves, stem and flowers of plants makes easy the access of such species as will be of use, but retards or keeps out entirely those which would only regale themselves on the sweets provided without conferring any benefit in return. A pollen-grain is somewhat analogous to a seed; as soon as it reaches the stigma, the viscid portion of the pistil, a sort of growth begins, and delicate tubes are pushed out and run down through the tissues to the ovary. Through these tubes the vitalizing principle (the fovilla) reaches and fecundates the ovules in the ovary. The period during which the pollen and the stigma are in a fit condition for fertilization is only of short duration. Those insects, therefore, which can fly quickly from plant to plant are much better adapted for this work than the slower moving, wingless, creeping insects which would be much more likely to have the pollen brushed from their bodies in their journey from plant to plant or even from flower to flower.

The size even of flying insects is also a matter of importance so that their bodies may come in contact with the anthers of one flower and the pistil of another, and most marvellous contrivances will be discovered when looked for in the blossoms of flowers, the effect of which is to exclude those visitors which are not profitable. Such are modifications in the shape and size of the corolla, the presence of tufts of hair, barbed spikes and bristles around the nectary, the secretion of the nectar at the bottom of long spurs or deep tubes of the corolla, etc. Wingless insects are kept from getting to the nectar by even more numerous constructions: reflexed bristles, copious hairs, viscid glands or viscid rings on the

stems, particularly around the flower-stalks. In some plants, as the fuller's teasel, the leaves join around the stem, forming a receptacle which catches rain and dew and forms an insuperable barrier. What is also doubtless a provision for the protection of the seeds of plants is the fact that when plants are eaten by animals or insects, it will frequently be noticed that the blossoms themselves are seldom destroyed. This may be due either to a more abundant production of thorns or bristles around these organs, or that they are rendered distasteful by certain compounds which are more abundantly secreted in the blossoms.

This fascinating branch of my subject is far too wide for me to more than refer to it now; but I am convinced that shape, position, nature and adornment of every part of a plant has some special significance if we can only discover it. That we have not yet perceived of what advantage these are, by no means justifies us in assuming that no advantage exists, and the search for the meaning of the innumerable shapes of flowers and leaves, their positions and behavior under varying circumstances provide a limitless source of pleasure and valuable instruction to whomsoever takes the matter up earnestly, verifying carefully each observation and exercising every care not to be carried away by the subject and jump to conclusions.

I have with me here to-day some excellent charts made by my friend, the Rev. Thomas Fyles, of Quebec, the president of the Entomological Society of Ontario. These will enable me to illustrate some of the points I have referred to, far better than I could otherwise have done. JAMES FLETCHER.

Some fine, colored charts were here exhibited, and much information was given about each in turn. Some of the points explained, were as follows:

NO. 1.—POLLEN-GRAINS.—Although so small, the minute pollen-grains are of various sizes and shapes, and have their surfaces beautifully ornamented in a variety of ways. In fact, these minute objects are just as characteristic and easily recognizable under the microscope as are the different kinds

of seeds. The pollens of several well-known plants were shown, as illustrative of the different shapes and markings of pollen-grains. The pollen of pine trees, which is very light, is produced in enormous quantities, and when carried on the wind and deposited at a distance, has sometimes been taken for showers of powdered sulphur. An instance of this was brought to his notice during the past summer at Armstrong, in British Columbia. A remarkable occurrence illustrating the extreme likeness of the pollen-grains of pine trees was one of these so-called sulphur showers on the deck of a ship nearly 200 miles from land. The doctor of the ship, who happened to be a botanist, detected the true nature of the yellow deposit by putting some of the material under his microscope.

NO. 2.—MOUTH-PART OF THE HONEY-BEE, the bumble-bee and the wasp.—The differences in the mandibles of these insects were pointed out and explained. The mandibles of the honey-bee are provided for the working of wax, and this only when softened at a high temperature. Those of the wasp for gnawing wood for the manufacture of the paper with which their nests are surrounded.

NO. 3.—FLOWERS OF THE PEA FAMILY.—These were illustrated by figures of the Bread bean, showing the distinct contrast of black and white, the Sweet pea and the Broom. The different structures were explained in their bearing on the question of cross-fertilization, attention being drawn to the brush-like stigma and the elastic keel.

NO. 4.—A FLOWER OF THE SUN-FLOWER FAMILY.—The many points of interest in these flowers, and the devices by which they are prevented from becoming self-fertilized, were explained.

NO. 5.—FLOWERS OF THE COMMON PRIMROSE, referred to above, showing the two forms with long and short pistils.

NO. 6.—FLOWER OF TROPÆOLUM.—Attention was drawn to the markings and tufts of hair in the throat of the garden flower known as the Nasturtium, which acted as path-finders to insects of a proper size and shape, so as to secure fertilization to the seeds

when they visited the flowers for the sake of the copious nectar in the long hours.

NO. 7.—FLOWERS OF ANTIRRHINUM.—The necessity of a large, strong insect, such as a bee, to open the Snap-Drum flower and reach the nectar was evident, but it was stated that sometimes bumble-bees gnawed a more direct entrance to the nectar at the base of the flower. After this entrance was once made, honey-bees might be seen rifling the flowers through this hole instead of entering by the proper opening. This Mr. Fletcher believed was an analogous case to honey-bees sucking the juice from injured fruits.

NO. 8.—THE NIGHT-FLOWERING CATCHFLY.—The blossoms of the Pink family are extremely interesting. There are 10 stamens. The flowers open after sun-down, when they are white and conspicuous. Sweet perfume is emitted, and during the first evening of the three in which each flower expands, five of the anthers are pushed out of the flower-tube and shed their pollen, after which they dry up and fall away. The next morning the petals curl up and present the appearance of a faded flower. During the day there is no perfume, but in the evening the petals again unfold, the scent returns, and the other five anthers appear. It is not until the third evening, when all the pollen is exhausted, that the pistil lengthens out and exposes itself to receive pollen from other flowers.

Several other charts of a similar nature to the above were shown, and their bearing on the subject explained. In bringing his remarks to a close, Dr. Fletcher spoke of the great value to all classes of workers of the introduction of "Nature Study" into our schools and universities. He spoke highly of the work which had been done by Profs. Bailey and Craig of Cornell University. He knew of nothing so valuable in education as inculcating a knowledge, and with it a desire for knowledge, concerning all the common objects which surround us on every side, an ignorance of which in most classes of the community was such a conspicuous characteristic.

(Continued next week.)

Contributed Articles.

Selling Comb Honey by the Case.

BY D. W. WORKING.

ACTING on the suggestion of the Editor of the American Bee Journal, I read before the Colorado State Bee-keepers' Association a proof of the article by R. A. Burnett & Co., published on page 759. This article, which seems to have been written especially for the enlightenment of Colorado bee-keepers, was discussed at some length by our members; and I venture to offer an abstract of their remarks.

Mr. Frank Rauchfuss, manager of the Colorado Honey-Producers' Association, said:

"I plead guilty to writing one of the letters quoted in that article. If we guarantee a weight for separated, half-separated, and unseparated honey, is it not virtually the same thing as selling by weight? In one of Burnett & Co.'s letters to us, they said they were not willing to buy an unknown quantity. I wrote back that they were buying a known

quantity. In one instance the buyers got 200 pounds more than they were figuring on. It is an injury and an imposition to make the statements in that article without stating the whole thing. A house of that standing should know something of the difference between separated and unseparated honey. They want to buy light weight honey by the pound, and as soon as concessions are reached they will throw out the heavy-weight honey. It has worked that way, and it will work that way again."

R. C. Aikin—I think our system is perfectly fair. It guards against wrong-doing on both sides.

H. C. Morehouse—I fully endorse those remarks. The article misrepresents the position of our people.

T. Lytle—When the buyer asks for quotations by the case, he makes a bid on the guaranteed weight. He is not injured or abused in any manner.

Mr. Aikin—Selling by the case makes it an easier matter to do business. We have rules to sell by.

Mr. Rauchfuss—None of the grading rules but ours have considered the question of weight. We have a standard section, which they do not have in other States. Having a standard section, we can have a standard of weight. How can you adopt a set of rules, with a standard section, without taking weight into consideration? I can show quantities of honey in our store now, graded as No. 2 under our rules, which will be sold as No. 1 in Eastern markets. Selling by

the case overcomes hair-splitting differences in tare. If a lot of separated honey, for example, does not net 21 pounds, we throw in a few cases extra; if they net heavier than that weight, we do not charge the buyer for the overplus. If the same conditions existed in Eastern markets, it would be more satisfactory to the general trade.

Mr. Aikin—I have a suspicion that the writer of that article has been bitten by some one with grading rules not so good as ours.

W. Z. Hutchinson—If Burnett & Co. knew that you had such rules, that article is not fair.

Mr. Aikin—If we sell by weight, then they will insist that we sell them light-weight honey, and they will sell by the case.

J. B. Dodds—And if you go to Chicago with the light-weight honey then they will want heavy-weight honey. We often put in heavy-weight honey. We often put in heavier weight in packing than we would if it were not for those rules.

Mr. Rauchfuss—When honey is sold by weight only, no distinction is made between separated and unseparated honey. But by our rules we admit that half-separated and unseparated honey are less desirable than separated, which is easier to lift out without damage, by the grocer. By our system, there is more uniformity of weights. We guarantee weights, and give a man every pound he buys.

The attentive reader will have noticed that the foregoing discussion is a defense of the Colorado system rather than a criticism of the article by Burnett & Co. This is natural. Our people are familiar with the merits of their own methods; they could not be perfectly sure of the merits of the arguments favoring another system by a single hearing of such an article as that read to them.

Burnett & Co. could not well be ignorant of the Colorado grading rules. These rules have been published in the American Bee Journal. A copy has been furnished to Burnett & Co.; and it was unjust to suppose that they are too stupid to understand them. In spite of the knowledge which they must have had to the contrary, they beg the whole question by referring to the, "pig in the bag." Let me quote the Colorado rule for No. 1 honey:

No. 1—Sections to be well filled and capped, honey white, slightly amber, comb white and not projecting beyond the wood, wood to be well cleaned; cases of separated honey to AVERAGE 21 pounds net per case of 24 sections, with a minimum weight of not less than 20 pounds for any single case; cases of half-separated honey to AVERAGE not less than 21½ pounds net per case of 24 sections, with a minimum weight of 20¾ pounds for any single case; cases of unseparated honey to AVERAGE not less than 22½ pounds net per case of 24 sections, with a minimum weight of 21½ pounds for any single case.

Will any intelligent reader of the American Bee Journal believe that the man who buys honey guaranteed to be packed according to that rule is buying a pig in a bag? Indeed, will not the reader know that the buyer, whether of one case or a car-load of cases, is sure to get at least a certain, definite amount of honey?

The argument in which the "bag of tea, coffee or sugar" figures, does not lack ingenuity. But why did not this wise logician include also the bag of flour? Does it weigh exactly a hundred pounds? Not at all. And yet flour is quoted by the hundred-weight. We buy a great variety of articles by the package. And the grocer who sells a section of honey as a pound is probably giving as much weight for the money as he does when he sells certain other "pound" packages. People who buy honey by the section can easily be made to understand that sections are very likely to vary in weight. Can it be that any one is so lacking in discernment as to suppose that every section (pound section, if you please) would be equal in weight to every other section?

Perhaps I am inexcusably ignorant; but I must confess that I do not know of a single association of bee-keepers that is "advocating the abandoning of weighing their honey." I am sure our rules make it necessary to have the scales pretty close by when packing comb honey—as the readers can not but know, having read the rule quoted above.

A word as to the editorial in the American Bee Journal. Is it quite fair to use the example of a car of honey which cleared the buyers \$400 "beyond a fair profit" as an excuse for intimating that the producer was not dealing squarely? That dealer might be accused of "smart dealing." The producer doubtless knew what he was selling, and was satisfied with the price. If I am not blind to its meaning, the editorial illustration was simply lugged in to furnish excuse for giving honey-producers a lot of goody-goody advice, while, if it really showed anything, it illustrated the readiness of the wholesale dealer to take the advantage of the producer.

— I am not speaking for the rules of any other association;

but I am sure the rules of the Colorado State Association can not be fairly interpreted to the hurt of the buyer. He is sure to receive no less than a very definite minimum weight. If he gets more, no one will complain. Of course, there are individual bee-keepers who can not or will not grade honestly. I am not defending them.

Arapahoe Co., Colo.



Aplary Inspection in the State of Michigan.

To the Honorable Dairy and Food Commissioner:

SIR:—I herewith submit my report for the work done during the months of July, August, September and October as State Inspector of Apiaries. I have visited in all 206 apiaries, having in them a total of 3,286 colonies. I have found 402 diseased colonies, making a total of 12.1 percent of those inspected. I have found the disease present in 119 apiaries, which is 57.7 percent of the whole number inspected. It will be noticed that the majority of the yards that contained the disease have in them only a few, and many times only one colony. It is impossible to tell exactly how many of the diseased colonies have been destroyed by the owner. Perhaps 50 percent of those condemned. I have been compelled to burn only one colony against the will of the owner. These apiaries were scattered through the counties of St. Joseph, Hillsdale, Lenawee, Washtenaw, Jackson, Calhoun, Barry, Eaton, Ingham, Livingston, Oakland, Macomb, St. Clair, Lapeer, Genesee, Shiawassee, Clinton, Ionia, Muskegon, Montcalm, Wexford, Benzie, Kalkaskia and Antrim.

I have found the disease more prevalent in the older sections of country, that is, there is more disease in southern and central Michigan than in the northern part of the State. In the north it is confined to localities and is not of very long standing. In almost every case it can be traced back to the bringing in of diseased bees or fixtures from the south. In the southern part, however, the disease is scattered promiscuously and breaks out in yards, infecting many colonies, without any source of contamination.

I have found many bee-keepers who are perfectly ignorant of the disease, and even when it is present in their yards and a large proportion of their bees are diseased, they fail to see that anything serious is wrong. These bee-keepers, of course, belong to the class who keep a few bees as a side-issue and are not posted in modern apiculture. Then, again, I have found the disease present in the apiaries of specialists in bee-culture, who are unfortunate enough to be located in the same vicinity with one of these bee-keepers who are not posted. The uninformed man will not listen to the advice and pleadings of the specialists, but will leave diseased colonies to die, and be robbed out by the bees from the larger yard, in this way working ruin on the helpless specialist, who cannot control the action of his ignorant neighbor. Then, oftentimes, when this specialist resorts to the protection of the law to compel his neighbor to clean up the diseased yard, he is looked upon by the people of his vicinity with utmost contempt.

The most active agents in spreading the disease are, first, that of robbing out colonies which have become weak and run down; and, second, that of using old hives in which the bees have died from the disease.

A grave difficulty arises when treating the bees to overcome foul brood, in that it is a very hard matter to impress upon the uneducated man the necessity of careful work, and the nature of bacteria. He will neglect some small but important matter, or fail to take some necessary precaution in order to insure success. As a consequence, the treatment is frequently a failure. This is not always the case, however; many apiarists are eager to learn all that is to be known about the disease, and by careful, persistent work have stamped it out of their yards. The treatment used by many apiarists has been to kill the infected colony with sulphur, remove the hive to the cellar, and cut out and save for home use all good honey, scrape clean and disinfect the hive, finally burning all refuse, scrapings and inside furniture. This method of treatment entails much less work than attempting to cure the colony, and the honey and also the hive is saved.

The needs are great, and many localities where the disease is known to exist have not been visited at all. Many of the localities visited this summer must be covered again at the beginning of next season to insure the effectual stamping out of the disease. I have met with the most hearty co-operation on the part of the intelligent apiarists of the State. They have not only manifested an interest in the work, but in many cases have materially assisted in the eradication of the disease in their locality.

Respectfully submitted,

JOHN M. RANKIN.

Report for 1901—Sweet Clover and Alfalfa.

BY WM. STOLLEY.

Like most of the readers of the American Bee Journal, I also will make my annual report, as usual.

Although drought-stricken as was the entire West, the past season, the great value of sweet clover and alfalfa as forage-plants and nectar-yielders is again clearly proven, by the crops of hay and honey I harvested.

Regarding the product of my apiary, my report is as follows:

From 21 colonies run for extracted honey, I got 3105 pounds, or an average of about 148 pounds per colony. From 5 colonies in New Heddon hives run for comb honey, I got 380 well-filled and perfectly capped sections, or an average of 76 sections per colony, and, besides, 60 pounds of extracted honey. I thus got a total of 3545 pounds of surplus honey from 26 colonies of bees, spring count, and plenty for the bees to winter on besides.

I had but 5 swarms, all told. My best colony run for extracted honey gave me 193 pounds of surplus, and my best colony run for comb honey gave me 136 sections and 12 pounds of extracted. I got 46 pounds of bright yellow wax from cappings, and reared 19 extra-fine queens from my choicest colonies for my own use; and increased, by the nucleus plan, from 26 to 36 colonies. Ever since October 18, my bees have been packed for winter, and had a general flight to-day (Nov. 12.) But I sustained quite a loss, in the past season's surplus, on account of the purchase of 5 queens in the late summer of 1900. The queens I got were reputed as of extraordinary value, and a remarkably superior strain. When these queens arrived, they proved to be undersized; but that did not scare me, because I have seen many a small queen which was much the superior of larger queens.

But when one of those queens proved herself to be a most miserable hybrid, my confidence in this extra "superior strain" was greatly shaken, and with considerable apprehension as to the value and worth of the other four, I waited results after wintering them.

The hybrid queen was replaced by another queen, and was introduced as late as October 12, 1900. In the spring following, three queens of that "superior strain" of bees proved to be practically worthless, and very poor layers, while one of them averaged as medium-good. Only the one I received in October, to take the place of the little black hybrid, proved to be a really fine queen, and her colony is one of the very best in my apiary now.

Two of the queens, which I bought as superior stock, I killed in early summer, and united their colonies with the colony of the queen that was lacking, to give her a trial in the season.

The united three colonies of this "superior strain" did not average in strength with any one of my ordinary colonies, after forming but one colony. The united colonies, if their queen had been all right, would have given me about 450 pounds of surplus extracted honey for the season that I removed good queens to make room for the "superior stock"; while the three united colonies of this "superior strain" have actually given me only 43 pounds surplus! Hence, I actually lost about 400 pounds of honey, in consequence of the inferiority of these 3 queens—a loss of \$60, since I sell my honey at 15 cents per pound.

I have but a small apiary, but I aim to have a superior queen in every hive, and if any one of them is lacking, she has to make room for something that grades well.

Some 18 or 19 years ago a Rev. Mr. Briggs, of Iowa, (if I remember the location rightly) made, in substance, the following proposition in the American Bee Journal, to breeders of queens generally:

I (Rev. Briggs) will pay \$100 for the best queen sent me by any queen-bee breeder, upon the following conditions, to-wit:

1.—All queens entrusted to me by any party, will receive at my hands, the very best of care and attention, and an accurate record of her work will be kept.

2.—At a certain date (stated) a disinterested committee (here the widely known parties comprising that committee were named) will be the judges in the contest, and the party whose queen is declared to be the premium queen will get the \$100, but the queen thus awarded becomes my (Rev. Briggs') property.

3.—I (Rev. Briggs) also reserve the right, while making this offer, to retain any and all the queens sent me, upon the payment of \$2 for each queen retained by me, and I will return all queens not wanted by me, free of charge, if so desired by the party or parties sending me queens.

Now, I do not remember the name of the party whose queen won the \$100, but I ordered one of the queens reared in the subsequent year from the \$100 queen by Rev. Briggs and paid \$5 for that queen, and it was the cheapest and best queen I ever bought.

Fifteen of the 36 queens now in my apiary are "Briggs queens," and they are in the lead as mothers of honey-producers.

I have other valuable strains of bees, obtained from other dealers in queen-bees, but the "Briggs strain" proves, best of all of them, that "blood will tell."

Now, Mr. Editor, I wish that another Rev. Briggs, as honest and reliable as was the one I have mentioned above, would work a similar scheme, and I, for one, will cheerfully pay \$5 for one of the offspring of such queens reared "in a natural way"; but I want the bees to rear the queens under the most favorable conditions; and I want them to build their own queen-cells from bottom to tip, too. No stick-made queen-cups for any queens that I wish to introduce into any colony in my apiary!

I read with great interest the proceedings of the meeting at Buffalo, and always "reach out at once" for the "Old Reliable" when it comes.

Hall Co., Neb.



The "Old Reliable" seen through New and Unreliable Glasses.
By E. E. HASTY, Sta. B Rural, Toledo, O.

TIME OF QUEEN EMERGENCE.

Yes, sir'ee, Dr. Miller, if it's true with regularity, or anything like regularity, that queens emerge in full colonies in 15 days, and only in nuclei or other depressing circumstances take 16 days, then that venerable (not sweet) 16 must come out of the books. But first let us hear from Maine, and Oregon, and Texas, and other places—honey-flow and dearth—early, mid-season, and late. Locality, crop conditions and season are normal things; but nuclei are abnormal things which should not rule. Page 685.

SWARMS AND FULL SHEETS OF COMB FOUNDATION.

Sounds reasonable that a swarm *might* consider sheets of foundation simply as partitions, and object to so many ridiculously narrow rooms. But a good many swarms have been successfully hived on full sheets, I take it. Page 686.

SIX HONEY CROPS IN TWELVE.

Six paying crops in twelve years, as an actual experience, rather takes us down in our estimate of bee-keeping in the irrigation regions. And it seems that we can hardly expect as good as six out of twelve unless there is something else besides alfalfa to crop up with. Page 695.

THAT UNFORTUNATE GLUCOSE-FEEDING.

Once more I will refer you to that ton of glucose on pages 579, 681 and 707. I supposed that it marked another milestone on a road that we would prefer fenced up—or rather never graded out. It used to be the case that pure glucose would only be taken when bees were in a state of semi-starvation, and that they would stop taking it as soon as they had a rather small supply—never building comb and storing surplus with it. When I read of so large an amount as a ton I feared that improvements of the article had changed some if not all of this. Glad if we don't have to believe so just yet. I must cry for mercy as to the dull way I read the editorial. The time of year forbids the idea of fraudulent surplus. We do not know that he succeeded in feeding it all. And to work off what he did feed he may have mixed it with something better.

STARVATION FOR BLACK BROOD.

That was a wise remark of McEvoy's on the black-brood question, page 710. Imprisoning bees off the combs for four days without feeding uses up the infected honey all right—so far, well; but it also gets the bees themselves into such a lean and inactive condition as they *must not be in* if they are to combat disease to advantage; and it takes days to get them out of that condition. So it is in doubt whether that particular manipulation does more good than harm, or more harm than good.

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N. E. FRANCE, Pres. ADA L. PICKARD, Sec.

Michigan.—The Michigan State Bee-Keepers' Association will meet in convention at Petoskey, Jan. 1 and 2, 1902. This promises to be the most largely attended meeting of the Association in years. You are invited to attend. Reduced rates on all railroads; tickets can be bought Dec. 30 and Jan. 1, good to return not later than Jan. 4. There will be no set program, but another of our "open congress" meetings. Those who have attended in the past know what that means, and those that don't should come and find out. A novel design for badge has been ordered in honor of "Petoskey."

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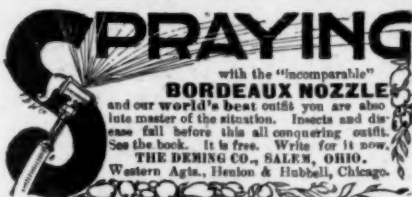
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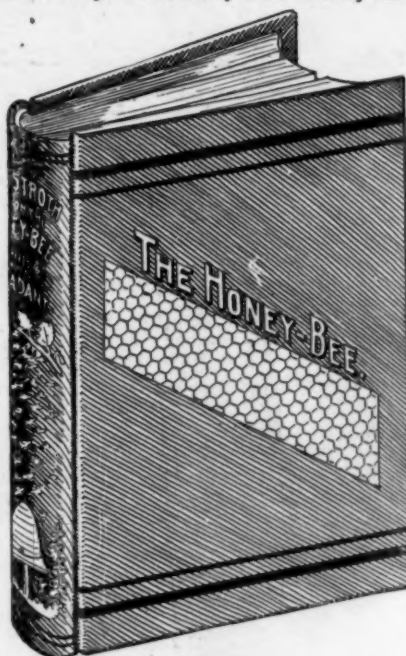
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THE CHRISTMAS LADIES' HOME JOURNAL is the largest number of that popular magazine ever issued, and the quality seems in keeping with the quantity. It opens with an account of "The People Who Help Santa Claus," after which comes a sweet story by Elizabeth McCracken, entitled, "The Baby Behind the Curtain." John Fox, Jr., the clever Kentuckian, contributes a short story, and the Journal's new serial of the Western metropolis, "The Russells in Chicago," is begun. Rudyard Kipling tells amusingly "How the First Letter was Written," and Elliott Flower has a laughable sketch, "The Linfield's Christmas Dinner." The Journal's two romances, "Christine" and "A Gentleman of the Blue Grass," are given their second and third installments respectively, and the library of the "Bradley House" is shown. Mr. Bok's editorial takes the form of a personal and somewhat confidential chat with his readers. There are also a children's Christmas play by Ednah Proctor Clarke, some touching stories of "The Other Side of the Town," by the Rev. David M. Steele, and an interesting account of the Sistine Madonna done in needlework. The various departments are unusually strong, and the whole magazine is full of Christmas spirit. A noteworthy feature, pictorially, is the double page of college girls, on which are shown groups of college girls from nearly every girls' school of note in the country. This is only the first in a "picture story" of one hundred photographs, which will show "What a Girl Does at College." The cover design is a beautiful piece of work by Thomas Mitchell Pierce. By The Curtis Publishing Company, Philadelphia. One dollar a year; ten cents a copy.

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Change of Chicago Passenger Station.

Beginning December 29, all passenger trains of the Nickel Plate Road will arrive and depart from Grand Central Station, 5th Ave. and Harrison St., Chicago, instead of Van Buren St. Station, as formerly. 49-52A1

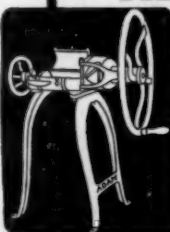


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HONEY AND BEESWAX

NET QUOTATIONS.

CHICAGO. —The honey market is of a slow nature. Dec. 19 little change in price of any of the grades. At present is season of the year many of the retailers have holidays. Choice grades of white comb honey, 14 @15c; good to No. 1, 13 1/2 @14c; light amber, 12 1/2 @13c; dark grades, including buckwheat, 10 @12c. Extracted, white, 5 1/2 @7c; amber, 5 1/2 @5 1/2c; dark, 5 @5 1/2c; the scale of prices varying according to flavor, body and package. Beeswax steady at 28c.

R. A. BURNETT & CO.

NEW YORK, Dec. 19.—Comb honey continues to be in good demand, and while the market is not overstocked, arrivals of white honey are sufficiently large to meet the demand, while buckwheat is rather scarce. We quote: Fancy white, 15c; No. 1, 14c; No. 2, 12 1/2 @13c; and buckwheat, from 10 @12c. Extracted remains dull and inactive with plenty of supply of all kinds. In order to move round lots, it is even necessary to shade the quotations, which are: White, 6 @6 1/2c; amber, 5 1/2 @6c; dark, 5 @5 1/2c; Southern, 5 1/2 @6c gallon, according to quality. Beeswax firm at 28c.

HILDEBRATH & SEIGLER.

CINCINNATI, Dec. 20.—The honey market is rather dull on account of the warm weather. Extracted sells only to manufacturers from 5 @6c; better grades alfalfa water-white from 6 @7c; white clover from 8 @9c. Fancy white comb honey sells from 13 1/2 @15 1/2c.

C. H. W. WEBER.

ALBANY, N. Y., Dec. 20.—Honey in good demand now, as this is the most satisfactory time to sell. Grocersmen are stocking up and will buy lines, when late they only buy enough to piece out. Fancy white comb, 15 @16c; mixed, 14 @15c; buckwheat, 12 @13c. Extracted, white, 6 1/2 @7 1/2c; mixed, 6 @6 1/2c.

H. R. WRIGHT.

OMAHA, Dec. 20.—New comb honey is arriving by express in small quantities from Iowa and Colorado, and selling at \$3.50 per case in a retail way. California extracted honey is being offered carlots at 4 1/2 @4 3/4c per pound, f.o.b. California shipping-points, but we have not heard of any sales having been made thus far. The production of extracted honey seems to be quite large this year in Colorado, Utah and California.

PEYCKE BROS.

BOSTON, Dec. 20.—The demand for honey is easing up, somewhat due in part to the holiday season at which time it is much neglected.

Our market at the present time runs 16c for strictly fancy in cartons; No. 1, 14 @15c; No. 2, 12 1/2 @13c. Extracted, light amber, 7 1/2 @8 1/2c; amber, 7c.

BLAKE, SCOTT & LEE.

DES MOINES, Dec. 20.—There is very little doing here in new crop of honey. Some small lots of near-by produced comb honey are on the market and selling in a retail way at \$3.50 to \$3.75 per case. We do not look for much trade in this line before Sept. 1. Our market does not consume a great deal of extracted honey.

PEYCKE BROS. & CHANEY.

DETROIT, Dec. 20.—Fancy white comb honey, 14 @15c; No. 1, 13 @14c; no dark to quote. Extracted, white, 6 @7c. Beeswax, 25 @26c.

M. H. HUNT & SON.

SAN FRANCISCO, Dec. 20.—White comb, 11 @12 1/2c; amber, 8 @10c; dark, 6 @7c. Extracted, white, 5 1/2 @6c; light amber, 7 1/2 @8 1/2c; amber, 4 @5c. Beeswax, 26 @28c.

Not much doing in this center, but there are no large stocks here of any description, and current values are being, as a rule, well maintained. There is more moving outward at present from southern producing points than from here. Some apiarists are reported holding back supplies, anticipating better prices in the spring.

KANSAS CITY, Dec. 20.—Up to the present time only small lots of new comb honey have been on the market, and these met with ready sale on the basis of 15 @16c per pound for fancy white. For next week heavier receipts are expected and quotations are issued at \$3.10 @ \$3.25 per case for large lots, which would be equal to about 14 @14 1/2c; the demand being quite brisk, a firm market is anticipated. Inquiries for extracted are a little more numerous, but large buyers still seem to have their ideas too low. In a small way 5 1/2 @6c is quotable.

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In order to accommodate the largely increased passenger business at Chicago Van Buren Street Depot, it has been found necessary to build a new and more commodious passenger station. Therefore, commencing December 29, all passenger trains of the Nickel Plate Road will arrive at and depart from Grand Central Station, 5th Ave. and Harrison St., during the erection of the new depot. 50-52A1

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Our Catalog. Very few changes in prices will be made in our new catalog, so do not delay your order, but send it at once. You will be allowed a refund if lower prices are made, and in case of higher prices ruling in the new catalog, if any, you will secure the benefit by ordering now. Catalog and estimates may be had by applying to the address given below.

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